DATA EVALUATION RECORD

1. CHEMICAL: Avermectin B_1 (MK-936)

2. FORMULATION: 90.5%, Tech.

3. CITATION: WARD, G.S. 1983. Acute toxicity of MK-936 Technical to blue crabs (Callinectes sapidus). Prepared by EG & G Bionomics, Pensacola, Fla.; submitted by Merck, Sharp & Dohme, Three Bridges, N.J.. Reg. No. 50658-EUP-R. Acc. No. 252115.

4. REVIEWED BY: John J. Bascietto
Wildlife Biologist
EEB/HED

5. DATE REVIEWED: 3/19/84

6. TEST TYPE: Acute toxicity - estuarine/marine - 96 hr LC_{50}

A) Blue crab - Callinectes sapidus

7. REPORTED RESULTS:

96-Hr LC_{50} = 153 (119-251) ug/l

8. REVIEWER'S CONCLUSIONS:

The study is not acceptable to fulfill the guidelines requirement for an estuarine toxicity study because the test vessels were aerated without determination of the actual (analytical) concentrations of toxicant tested. Only the nominal concentrations were reported. It may be concluded that the material is at least "highly toxic" to blue crabs, but may be "very highly toxic" to this species.

raw data submitted 3/26/85 - JB.

/

9. Materials/Methods

A. Test Procedure:

Crabs were obtained from a commercial supplier and held 3-10 days prior to test. Mortality was 0% for 48-hrs immediately prior to beginning test. The crabs were 40-55 mm carapace width and 3.4-9.0g, wet weight. Holding water was natural, filtered (5 um pore) seawater 18-23 °/oo; 22°C.

Test water was natural seawater (5 um pare size, filtered). Tests were conducted in 19-l glass jars/15-l test solution or control water. Salinity was 18 °/oo; temp. = 22-23°C. Three(3) crabs per jar were tested with 4 replicates. Loading (calculated) = 1.2 g/l. The jars were aerated throughout the study; pH = 8.1; D.O. = 7.5 ppm (initial).

Nominal concentrations of MK-936: 31, 62, 125, 250, 500 and 1000 ppb were tested, as well as seawater and solvent (nanograde acetone) controls.

B. Statistical Analysis

Stephan's (1977) LC_{50} computer program was used; all LC_{50}'s were calculated using the moving average angle method.

10. Results

Nominal Concentration (ug/l; ppb)	Percent Mortality* 24-HR	48-HR	72-HR	96-HR
Control	0	0	0	0
Solvent Control	0	0	0	0
31	0	0	0	8
62	8	17	25	25
125	8	25	25	33
250	33	42	58	58
500	75	92	92	92
1000	83	92	100	100

* 12 crabs per conc. were tested (3 crab/vessel; 4 replicates).

Calculated LC50 + 95% c.i. (nominal)

HR.	LC50 (ppb)	95% c.i. (ppb)
24	344	243-500
48	215	123-260
72	173	121-253
96	153	119-251

11. Reviewer's Evaluation

A. Test Procedure: the procedure used was acceptable under current EPA guidelines except that the analytical (actual) concentrations of toxicant tested were not determined initially nor during the experiment. Because this test was aerated it is necessary to do the analytical work.

B. Statistical Analysis: EEB did not validate the LC_{50} but the method used in the study is the same as that used by EEB. The statistics were not validated because the study is unacceptable.

C. Results/Discussion

Since the study was aerated the analytical concentrations should have been determined in order to account for any possible volitilization of the toxicant with the aeration, or from other effects of aeration on the toxicant's persistence or its interaction with the shrimp. Since no analytical chemistries were performed EEB cannot accept the "nominal" values. It cannot be determined whether the LC_{50} is reasonably accurate. It could be much lower than 153 ug/l if a significant amount of toxicant was lost in aeration or degraded in solution. The "reported results" are unacceptable, other than to say that the material is at least "highly toxic" to blue crabs, but could in fact be "very highly toxic" to this species.

Raw data for replicates at 31 & 62 ppb were not submitted.

D. Conclusions

1. Category: Invalid

2. Rationale: - test was aerated without determination of the analytical (actual) concentrations of toxicant tested.

- the raw data for replicates at 31 and 62 ppb were not submitted.

3. Repair: None possible because ~~the analytical concentrations must be determined during the test.~~ crab cannot satisfy the guidelines for fish shrimp mollusc -PB

Raw data submitted 3/26/85 -PB

SECTION C2b2

RAW DATA

WARD, G.S. 1983. Acute toxicity of MK-936 technical to blue crabs, (Callinectes sapidus).

Prepared by EG&G Bionomics, Pensacola, Florida.

Reg. No. 50658-EUP-R, EPA Accession No. 252115.

Avermectin science review

Page _____ is not included in this copy.

Pages 5 through 11 are not included in this copy.

The material not included contains the following type of information:

___ Identity of product inert ingredients

___ Identity of product impurities

___ Description of the product manufacturing process

___ Description of product quality control procedures

___ Identity of the source of product ingredients

___ Sales or other commercial/financial information

___ A draft product label

___ The product confidential statement of formula

___ Information about a pending registration action

X FIFRA registration data

___ The document is a duplicate of page(s) _____

___ The document is not responsive to the request

The information not included is generally considered confidential by product registrants. If you have any questions, please contact the individual who prepared the response to your request.